

**TLP3041(S), TLP3042(S), TLP3043(S)**

OFFICE MACHINE

HOUSEHOLD USE EQUIPMENT

TRIAC DRIVER

SOLID STATE RELAY

The TOSHIBA TLP3041 (S), TLP3042 (S) and TLP3043 (S) consist of a zero voltage crossing turn-on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

All parameters are tested to the specification of TLP3041, TLP3042, TLP3043.

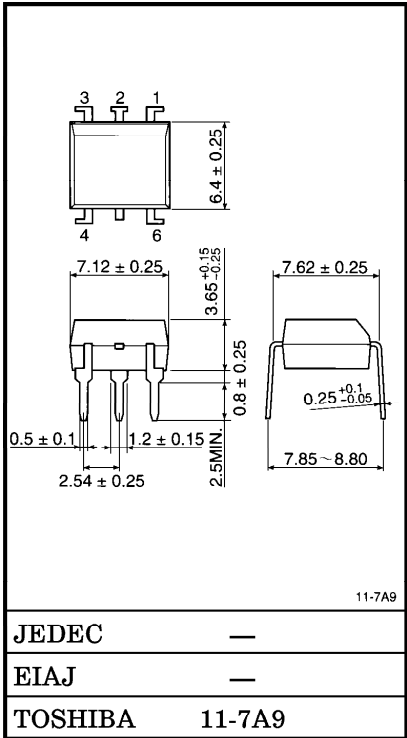
- Peak Off-State Voltage : 400V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3041)  
10mA (Max.) (TLP3042)  
5mA (Max.) (TLP3043)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349
- Isolation Voltage : 5000V<sub>rms</sub> (Min.)
- Option (D4) Type
- VDE Approved : DIN VDE0884 / 06.92  
Certificate No. 68329
- Maximum Operating Insulation Voltage : 890V<sub>PK</sub>
- Highest Permissible Over Voltage : 8000V<sub>PK</sub>

(Note) When a VDE0884 approved type is needed, please designate the “Option (D4)”

● Device Construction

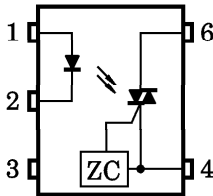
	7.62mm pich standard type	10.16mm pich (LF2) type
Creepage Distance	7.0mm (Min.)	8.0mm (Min.)
Clearance	7.0mm (Min.)	8.0mm (Min.)
Insulation Thickness	0.5mm (Min.)	0.5mm (Min.)

Unit in mm



Weight : 0.39g

PIN CONFIGURATION (Top view)



- 1 : ANODE
- 2 : CATHODE
- 3 : N.C.
- 4 : TERMINAL 1
- 6 : TERMINAL 2

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## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	50	mA
	Forward Current Derating (Ta ≥ 53°C)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / °C
	Peak Forward Current (100 $\mu$ s pulse, 100pps)	$I_{FP}$	1	A
	Power Dissipation	$P_D$	100	mW
	Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_D / ^\circ\text{C}$	-1.0	mW / °C
	Reverse Voltage	$V_R$	5	V
	Junction Temperature	$T_j$	125	°C
DETECTOR	Off-State Output Terminal Voltage	$V_{DRM}$	400	V
	On-State RMS Current	$I_T$ (RMS)	100	mA
	Ta = 25°C Ta = 70°C		50	
	On-State Current Derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ\text{C}$	-1.1	mA / °C
	Peak On-State Current (100 $\mu$ s pulse, 120pps)	$I_{TP}$	2	A
	Peak Nonrepetitive Surge Current (P <sub>W</sub> = 10ms, DC = 10%)	$I_{TSM}$	1.2	A
	Power Dissipation	$P_D$	300	mW
	Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_D / ^\circ\text{C}$	-4.0	mW / °C
	Junction Temperature	$T_j$	115	°C
Storage Temperature Range		$T_{stg}$	-55~150	°C
Operating Temperature Range		$T_{opr}$	-40~100	°C
Lead Soldering Temperature (10s)		$T_{sol}$	260	°C
Total Package Power Dissipation		$P_T$	330	mW
Total Package Power Dissipation Derating (Ta ≥ 25°C)		$\Delta P_T / ^\circ\text{C}$	-4.4	mW / °C
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)		$BV_S$	5000	Vrms

(Note 1) Device considered a two terminal device : Pins 1, 2 and 3 shorted together and pins 4 and 6 shorted together.

## RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	$V_{AC}$	—	—	120	Vac
Forward Current	$I_F^*$	15	20	25	mA
Peak On-State Current	$I_{TP}$	—	—	1	A
Operating Temperature	$T_{opr}$	-25	—	85	°C

※ In the case of TLP3042

## INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	$V_F$	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	$I_R$	$V_R = 5\text{V}$	—	—	10	$\mu\text{A}$
	Capacitance	$C_T$	$V = 0, f = 1\text{MHz}$	—	10	—	pF
DETECTOR	Peak Off-State Current	$I_{\text{DRM}}$	$V_{\text{DRM}} = 400\text{V}$	—	10	100	nA
	Peak On-State Voltage	$V_{\text{TM}}$	$I_{\text{TM}} = 100\text{mA}$	—	1.7	3.0	V
	Holding Current	$I_H$	—	—	0.6	—	mA
	Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{\text{in}} = 120\text{Vrms}, T_a = 85^\circ\text{C}$ (Fig.1)	200	500	—	$\text{V} / \mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{\text{in}} = 30\text{Vrms}, I_T = 15\text{mA}$ (Fig.1)	—	0.2	—	$\text{V} / \mu\text{s}$

## COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	TLP3041	$I_{\text{FT}}$	$V_T = 3\text{V}$	—	—	15	mA
	TLP3042			—	5	10	
	TLP3043			—	—	5	
Inhibit Voltage		$V_{\text{IH}}$	$I_F = \text{Rated } I_{\text{FT}}$	—	—	40	V
Leakage in Inhibited State		$I_{\text{IH}}$	$I_F = \text{Rated } I_{\text{FT}}$ $V_T = \text{Rated } V_{\text{DRM}}$	—	100	300	$\mu\text{A}$
Capacitance Input to Output		$C_S$	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation Resistance		$R_S$	$V_S = 500\text{V (R.H.} \leq 60\%)$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation Voltage		$BV_S$	AC, 1 minute	5000	—	—	Vrms
			AC, 1 second (in oil)	—	10000	—	
			DC, 1 minute (in oil)	—	10000	—	Vdc

Fig.1 dv/dt TEST CIRCUIT

